

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Dynamics of VPY-GFP labeled puncta in *Medicago truncatula* growing root hairs 3dpi with *Sinorhizobium meliloti*. The typical movement of nucleus-associated, VPY-labeled dots is shown in uninfected root hairs in an inoculated *M. truncatula* root. The movie is 108x faster than real time (41 images were acquired over 9min). Each image is a z-projection of a stack encompassing the 3 root hairs. DsRed fluorescence (pseudo-colored magenta) is merged to GFP fluorescence (pseudo-colored green). The imaged field is 100x125 μm .

File Name: Supplementary Movie 2

Description: Dynamics of VPY-GFP labeled puncta in a *Medicago truncatula* root hair undergoing infection by CFP-labeled *Sinorhizobium meliloti*. The movement of nucleus-associated and infection thread tip-associated VPY-labeled dots is shown in a *M. truncatula* root hair hosting an elongating infection thread. The movie is accelerated 150x compared to real time (39 images were acquired over 10 min). Each image is a z-projection of a stack encompassing the infection thread. CFP fluorescence of the rhizobia (pseudo-colored magenta) is merged to GFP fluorescence (pseudo-colored green). The imaged field is 60x60 μm .